Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application. Please amend Claims 20 and 21 as indicated in the following Listing of Claims.

Listing of Claims

1-19. Canceled.

20. (Currently amended) A polymerization catalyst composition comprising a compound having the formula:

$$MR_4,$$

wherein

M is selected from titanium, zirconium or hafnium;

R in each instance is independently selected from a beta-stable ligand; and

wherein the compound is supported on an aluminum-containing support ~~comprising~~ selected from fluorided alumina, fluorided silica-alumina, fluorided/silated alumina, aluminophosphate, or mixtures thereof.

21. (Currently amended) A polymerization catalyst composition comprising a compound having the formula:

$$M(CH_2XR_3)_4,$$

wherein

M is selected from titanium, zirconium or hafnium;

X in each instance is independently selected from carbon, silicon, germanium, tin, or lead; and

R in each instance is independently selected from a saturated or unsaturated hydrocarbon; and

wherein the compound is supported on an aluminum-containing support ~~comprising~~ selected from fluorided alumina, fluorided silica-alumina, fluorided/silated alumina, aluminophosphate, or mixtures thereof.

22. (Previously presented) The polymerization catalyst composition of Claim 21, wherein R in each instance is independently selected from an alkyl radical having from 1 to about 12 carbon atoms, an alicyclic radical having from about 4 to about 12 carbon atoms, an aryl radical having from 6 to about 24 carbon atoms, and a hydrocarbyl substituted aryl radical having from about 6 to about 24 carbon atoms.

23. (Previously presented) The polymerization catalyst composition of Claim 20, wherein the aluminum-containing support further comprises silica-alumina, alumina, silated alumina, aluminum phosphate, phosphated alumina, or mixtures thereof.

24. (Previously presented) The polymerization catalyst composition of Claim 20, wherein the aluminum-containing support further comprises alumina which comprises less than about 6 weight percent silica.

25. (Previously presented) The polymerization catalyst composition of Claim 20, wherein the aluminum-containing support has a surface area greater than or equal to about 150 m^2/gram.

26. (Previously presented) The polymerization catalyst composition of Claim 20, wherein R in each instance is independently selected from $-CH_2C(CH_3)_3$, benzyl, $-CH_2Si(CH_3)_3$, or 1-methylene-1-naphthyl.

27. (Previously presented) The polymerization catalyst composition of Claim 20, wherein the total amount of zirconium or hafnium in the catalyst composition is from about 0.01 to about 10 weight percent.

28. (Previously presented) The polymerization catalyst composition of Claim 20, wherein the total amount of zirconium or hafnium in the catalyst composition is from about 0.1 to about 5 weight percent.

29. (Previously presented) The polymerization catalyst composition of Claim 20, wherein the total amount of zirconium or hafnium in the catalyst composition is from about 0.2 to about 4 weight percent.

30. (Previously presented) The polymerization catalyst composition of Claim 20, wherein MR_4 is selected from zirconium tetrakis(trimethylsilylmethyl), hafnium tetrakis-(trimethylsilylmethyl), or a combination thereof.

31. (Previously presented) The polymerization catalyst composition of Claim 20, wherein MR_4 is selected from zirconium tetrakis(trimethylsilylmethyl), hafnium tetrakis-(trimethylsilylmethyl), or a combination thereof; and wherein the aluminum-containing support is alumina which comprises less than about 6 weight percent silica.

32. (Previously presented) The polymerization catalyst composition of Claim 20, wherein the compound supported on the aluminum-containing support comprises supported catalyst system particles from about 1 to about 40 microns in size.

33. (Previously presented) The polymerization catalyst composition of Claim 20, wherein the compound supported on the aluminum-containing support comprises supported catalyst system particles from about 1 to about 20 microns in size.

34. (Previously presented) The polymerization catalyst composition of Claim 20, wherein the polymers produced from the catalyst composition have a weight average (M_w) molecular weight greater than about 1,000,000.

35. (Previously presented) The polymerization catalyst composition of Claim 20, wherein the ethylene polymers produced from the catalyst composition have a comonomer incorporation from about 0.05 to about 10 weight percent comonomer.

36. (Previously presented) A polymerization catalyst composition comprising a titanium halide; an aluminum alkyl; and an oxide selected from fluorided alumina, fluorided/silated alumina, or a combination thereof; and optionally comprising a magnesium halide.